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Magnetic Nature of Delafossite-type Metallic Conductor $\text{Na}_{0.75}\text{CoO}_2$ in Strongly Correlated and Frustrated Systems

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Magnetic and large thermoelectric nature have been investigated for delafossite-type metallic conductive oxide $\text{Na}_{0.75}\text{CoO}_2$ with 2D triangular lattices which are expected to enhance geometrical spin frustration. Static magnetic susceptibility shows remarkable enhancement below 7K, but no irreversibility between zero-field cooled and field cooled magnetizations are observed. This temperature is indeed good agreement with the specific heat upturn temperature reported by Ando et al. in $\text{Na}_{0.5}\text{CoO}_2$. This feature indicates a formation of itinerant ferromagnetic state which are often found in heavy fermionic semimetals or renormalized paramagnetic Fermi liquids such as RVB ground states. At the conference, we will discuss the role of coherence between charge dynamics and geometrically frustrated spin effects on 2D triangular lattices. And the possibility of heavy fermion formation in $\text{Na}_{0.75}\text{CoO}_2$ will be also discussed from the viewpoint of the strongly correlated and frustrated systems.